National Institute of Environmental Health Sciences

Cost estimates for flood resilience and protection strategies in New York City

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Abstract:

In the aftermaths of Hurricanes Irene, in 2011, and Sandy, in 2012, New York City has come to recognize the critical need to better prepare for future storm surges and to anticipate future trends, such as climate change and socio-economic developments. The research presented in this report assesses the costs of six different flood management strategies to anticipate long-term challenges the City will face. The proposed strategies vary from increasing resilience by upgrading building codes and introducing small scale protection measures, to creating green infrastructure as buffer zones and large protective engineering works such as storm surge barriers. The initial investment costs of alternative strategies vary between $11.6 and $23.8 bn, maximally. We show that a hybrid solution, combining protection of critical infrastructure and resilience measures that can be upgraded over time, is less expensive. However, with increasing risk in the future, storm surge barriers may become cost-effective, as they can provide protection to the largest areas in both New York and New Jersey.

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Resource Description

Exposure : ☑

weather or climate related pathway by which climate change affects health

Extreme Weather Event

Extreme Weather Event: Flooding, Hurricanes/Cyclones

Geographic Feature: ☑

resource focuses on specific type of geography

Ocean/Coastal, Urban

Geographic Location: ☑

resource focuses on specific location

United States

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Intervention: ☑

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Cost/Economic

Resource Type: ☑

format or standard characteristic of resource

Policy/Opinion

Resilience: ☑

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content